

### **REMARKS**

Claims 1-3, 5-39, 44 and 45 are present in the application. Claims 1, 29, 32 and 44 have been amended. Claims 4 and 40-43 have been cancelled. Claim 1 is independent. Reconsideration of this application, as amended, is respectfully requested.

### **Drawings Objections**

The drawings have been objected to due to the lack of a legend in FIGs. 4-10 such as "Prior Art." Applicants respectfully disagree.

In particular, although Boolean Decision Diagram (BDD) is well known, using the BDD to represent the rules in a Directed Acyclic Graph (DAG) to configure a product is not well known. Here, as disclosed on page 15, lines 20-30 of the specification, FIG. 4 shows a PC Example, exemplifying a BDD *representing the third rule*; FIG. 5 shows another PC Example, exemplifying a BDD *representing the domain constraints*; FIG. 6 shows another PC Example, exemplifying a BDD *representing the rules*; FIG. 7 shows another PC Example, exemplifying a BDD *representing the rules and the domain constraints with both public and private variables included*; FIG. 8 shows another PC Example, exemplifying the virtual table with a BDD *representing the rules and the domain constraints*, and with only the public variables included; FIG. 9 shows another PC Example, exemplifying a BDD *representing consistent configurations under the selection of the Seagate-Barracuda-9-9, 1 GB harddisk*; FIG. 10 shows show another PC Example, exemplifying *the virtual table where all variables except X0 and X1 is existentially quantified out*. In other words, FIGs. 4-10 of the present application are used to illustrate several

embodiments of the invention. Therefore, FIGs. 4-10 of the present application are not “Prior Art” as the Examiner alleged.

The drawings have also been objected to under 37 C.F.R. § 1.83(a). Since claim 4 has been cancelled, this objection has been obviated and/or rendered moot.

Reconsideration and withdrawal of this objection are respectfully requested.

### **Claim Objections**

Claims 4 and 40-42 have been objected. Since claims 4 and 40-42 have been cancelled, it is respectfully submitted that this objection has been addressed. Reconsideration and withdrawal of this objection are respectfully requested.

### **Claim Rejections Under 35 U.S.C. §112**

Claims 1-45 stand rejected under 35 U.S.C. § 112, first and second paragraphs. These rejections are respectfully traversed.

In view of the foregoing amendments, it is respectfully submitted that these rejections have been addressed.

In particular, the Examiner alleged that the recitation “the DAG being a non-tree structure” is not found in the specification. Applicants respectfully disagree. In fact, each of FIGs. 4-10 clearly shows that the DAG is a non-tree structure, because each of the DAG in FIGs. 4-10 has a shared node with at least two pointers pointing to the node (*e.g.*, node X4 in FIG. 6). The specification on page 7, lines 19-21 also clearly discloses “identifying a first and a second node having the same expression and *the pointers of which point to the same nodes.*” If a DAG

has a shared node (*i.e.*, a node with at least two incoming pointers), this DAG must be a non-tree structure because a shared node does not exist in a tree structure.

In addition, it is well settled that *ipsis verbis* disclosure is not necessary to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph. Instead, the disclosure need only reasonably convey to persons in the art that the inventor had possession of the subject matter in question. *In re Edwards*, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978); and *Fujikawa v. Wattanasen*, 39 USPQ2d 1895 (Fed. Cir. 1996). By reading the disclosure of the present application, one skilled in the art would fully understand the inventor had possession of the subject matter as claimed, *i.e.*, “the DAG being a non-tree structure” as recited in previously presented claim 1.

Notwithstanding the above, while not conceding to the Examiner’s rejection, but merely to expedite prosecution, as the Examiner will note, independent claim 1 has been amended to recite “the DAG including at least one node having at least two pointers pointing to the node.” Applicants respectfully submit that the above recitation is clearly disclosed in FIGs. 4-10 and the corresponding description of the present invention.

With regard to the recitation “choosing a current component, selecting one of alternatives for the current component, checking the DAG whether the selected alternative is compatible with other selected alternatives of other chosen components” as set forth in claim 1, it should be noted that those steps are “repeatedly” performed as recited in claim 1 when configuring a product. For example, a PC has several components such as CPU, hard drive, motherboard, etc. Each of the components has a plurality of alternatives. For example, the alternatives for the CPU can be Intel processors with different operating frequencies, AMD processors different operating

frequencies, etc. The hard drive can be Seagate with different capacities, Maxtor with different capacities, etc. When configuring a PC, the step of choosing a current component (e.g., CPU) is performed, one of the alternatives (Intel processors, AMD processor, etc.) for the current component (e.g., CPU) is selected, and then the rules in the DAG are checked to see whether the selected CPU (e.g., Intel Centrino processor with a certain operation frequency) is compatible with other selected alternatives of other chosen components. In this case, since the CPU is the first component to be chosen, there will be no compatibility issue.

Once one of the alternatives for the CPU has been selected (e.g., Intel Centrino processor), the above-noted three steps are performed again for another component. For example, the step of choosing a current component (e.g., hard drive) is performed, one of the alternatives (Seagate and Maxtor hard drives) for the current component (e.g., hard drive) is selected (e.g., Seagate hard drive with 500 MB), and then the rules in the DAG are checked to see whether the selected Seagate hard drive is compatible with the already selected Intel Centrino processor (*i.e., other selected alternatives of other chosen components*).

Subsequently, the above-noted three steps are performed for the other components until the alternatives for all components of a PC are selected. Therefore, Applicants respectfully submit that the recitation “choosing a current component, selecting one of alternatives for the current component, checking the DAG whether the selected alternative is compatible with other selected alternatives of other chosen components” as set forth in claim 1 is definite and clear.

With regard to the recitation “the step of representing the rules in the DAG comprises representing the rules in a DAG comprising nodes, the mathematical expressions of which are ordered according to a given ordering such that, for each node, the expression of the actual node

is of a lower order than the expressions of any nodes pointed to by the pointers of the actual node” as recited in claim 14, Applicants respectfully submit that this step is to assign an order for each node in the DAG. For example, as shown in FIG. 6, the node X4 has a lower order than the node X5 (*i.e.*, the expression of the actual node is of a *lower order* than the expressions of any nodes pointed to by the pointers of the actual node) because the node X5 is pointed by a pointer from the node X4.

With regard to the “actual” DAG recited in claim 30, the actual DAG is an initial structure, and after the steps recited in claim 30 are performed (*e.g.*, removing/adding nodes, etc.), the actual DAG becomes the DAG representing the rules as recited in claim 1.

With regard to the “observer components” and “non-observer components” recited in claim 38, the observer components are the component for which the user will not choose an alternative but only be interested in what the compatible values are (see page 14, lines 1-4). On the other hands, the non-observer components are the components for which the user will choose an alternative.

With regard to the recitation “at least one of the alternatives of the current component is compatible with the other selected alternatives respectively for the other chosen components and is compatible with at least one of the alternatives in each of yet-to-be-chosen components” as recited in claim 45, Applicants respectfully submit that this means that once an alternative for a component is selected, this alternative for this component is guaranteed to be compatible with the other *already selected* alternatives of the components, and is also guaranteed to be compatible with at least one the alternatives in *each of yet-to-be-chosen components*. For example, when the 500 MB Seagate hard drive is selected, it is guaranteed that the 500 MB

Seagate hard drive is compatible with the already selected Intel Centrino processor, and is compatible with at least one of the motherboard alternatives, *although the motherboard alternative is not selected yet*. This feature can guarantee that at least one solution (*i.e.*, a product with selected alternatives for each of the components) will exist no matter what alternatives the user selects. This is because the rules relating to compatibilities between alternatives from different components have been defined and represented the rules in the DAG, thereby guaranteeing that at least one solution exists.

In view of the above, all claims are definite and clear and comply with the written description requirement. Reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first and second paragraphs, are therefore respectfully requested.

### **Claim Rejections Under 35 U.S.C. § 101**

Claims 1-39 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. This rejection is respectfully traversed.

The Examiner alleged that the limitations of the claims are directed to an abstract idea and that there is no practical application by physical transformation to produce a result. Applicants respectfully disagree.

In particular, claims 1-39 fall within at least one of the four enumerated categories of patentable subject matter (*i.e.*, process, machine, manufacture, or composition of matter), not within the 35 U.S.C. §101 judicial exception, because the claimed invention is directed a method of configuring a product comprising a number of components as recited in independent claim 1.

In the alternative, MPEP 2106. IV.C.2 states as follows:

A claimed invention is directed to a practical application of a 35 U.S.C. §101 judicial exception when it:

- (A) "transforms" an article or physical object to a different state or thing; or
- (B) otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

Here, claims 1-39 are directed to at least one practical application within the technological arts, *i.e., configuring a product to produces a useful, concrete and tangible result, i.e., "the product being configured using all of the selected alternatives for all of the components"* as recited in claim 1.

In view of the above, since claims 1-39 fall within at least one of the four enumerated categories of patentable subject matter, or in alternative, are directed to at least one practical application of a 35 U.S.C. §101 judicial exception, it is believed that claims 1-39 are directed to statutory subject matter. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 101 are respectfully requested.

### **Claim Rejections Under 35 U.S.C. § 103**

Claims 1-45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch, U.S. Patent No. 5,515,524 in view of Applicant's own disclosure. This rejection is respectfully traversed.

It is a key feature of the present invention that the DAG is used for *checking for compatibilities* (as explained, *e.g.*, in the specification page 41, lines 20-24) and not the individual rules (as prescribed by Lynch). *The Examiner on page 15, line 1 of the outstanding Office Action has left out this important aspect of the invention when alleging Lynch*

*discloses this claimed feature.* In fact, Lynch nowhere discloses using the tree structure in FIG. 2 to check the compatibilities when configuring a product. FIG. 2 of Lynch simply is a functional hierarchy which only defines the function that a component performs and cannot provide the ability to daisy chain components (see also col. 4, lines 9-51). Lynch nowhere discloses that the compatibility rules are represented by the functional hierarchy shown in FIG. 2 of Lynch.

In addition, although DAG is known in the art, representing the rules in a DAG to configure a product is not well known. Furthermore, since FIG. 2 of Lynch simply is a functional hierarchy which only defines the function that a component performs, applying a non-tree DAG (*i.e.*, the DAG including at least one node having at least two pointers pointing to the node) to FIG. 2 of Lynch does not make any sense. As shown in FIG. 2 of Lynch, the higher level of the tree represents a generic (*e.g.*, memory 34), and the lower level represents species (*e.g.*, memory chip 42 and memory upgrade 43) of the generic. If a non-tree DAG were to apply to the tree structure of Lynch, the lower level could no longer represent species. Therefore, one skilled in the art would not have the motivation to modify Lynch in view of the DAG, not to mention the fact that neither Lynch nor the DAG itself teaches “representing the rules in a Directed Acyclic Graph (DAG)” to configure a product and “checking the DAG whether the selected alternative is compatible with other selected alternatives of other chosen components” as recited in claim 1.

Accordingly, neither of the utilized references individually or in combination teaches or suggests the limitations of independent claim 1 or its dependent claims. Therefore, Applicants



respectfully submit that claim 1 and its dependent claims clearly define over the teachings of the references relied on by the Examiner.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

### **CONCLUSION**

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but merely to show the state of the prior art, no further comments are necessary with respect thereto.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Joe McKinney Muncy, Registration No. 32,334 at (703) 205-8000 in the Washington, D.C. area.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a three (3) month extension of time for filing a response in connection with the present application.

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Reply to Office Action of July 9, 2007

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted

By 

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